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# The Automobile

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BALTIMORE & OHIO RAILROAD'S AUTOMOBILE SERVICE.

### The Baltimore and Ohio Railroad's Automobile Service.

Passengers on the Baltimore and Ohio just before reaching Washington receive a little folder that tells of a novel service instituted by the company for patrons of its lines. An addition has been built to the Washington station, with asphalt drives running out to the street. Here will be found on the arrival of all trains automobile cabs and carriages for the exclusive use of its patrons. The information is also given that the conductor will receive orders for automobile carriages and will telegraph them ahead. In this manner passengers are always sure of immediate service on their arrival.

The B. & O. is the first road to introduce such a service, and it is certainly a great attraction and an evidence of the progressiveness of the road. The vehicles have the name of the road on their sides, as shown on the preceding page. The drivers are handsomely uniformed in dark gray whipcord with tan leather cap, and on the left breast a badge with B. & O. E. V. Service thereon.

The folder also gives the schedule of rates, which have been approved by the District Commissioners. The service is rendered at all times and much pride is taken in this new departure of the company.

The cabs, one of which is shown on the front page of this issue, are very handsomely finished throughout. The exterior is finished in black and Columbia green. The interior is upholstered in the finest of goat skin. For the accommodation of baggage there is a rail around the top, and at the back there is a rack provided for trunks.

The motive power comes from the storage battery concealed beneath the vehicle. The controller is operated by the driver's left hand and the steering lever by his right. The side lights are electric.

While the cabs and drivers are in the exclusive service of the B. & O., yet they are furnished by the Washington Electric Vehicle Transportation Co., one of the subsidiary companies of the Electric Vehicle Co. At the stations of the above company these vehicles are charged and stored. This company furnishes a variety of automobiles for public use, and to it is due the credit for the excellence of this railroad cab service. The innovation made by this company will undoubtedly soon be copied in other cities.

Circulars recently received from Savannah, Mo., describe a motorcycle being built by John L. Glazier, who has also built a very neat looking runabout. The motive power is a gasoline motor which is controlled entirely from the steering lever, on which there are two electric push buttons.

### On Which Side Shall We Sit?

BY W. E. PARTRIDGE.

The question often arises, on which side ought the driver of an automobile sit? In England that question is answered at once by saying the right hand side is the proper place. The reason for this is, that in England carriages when meeting turn to the left and pass each other to the right. A seat on the right hand side of the carriage then enables the drivers to see the space between the carriages and to govern himself accordingly. His seat on that side and the turning to the left arose from the necessities of a driver who handles horses and must have his right hand free, and at the same time be in a position where he can see between the passing vehicles. The next question that arises is in regard to the position of the driver in America and our methods of turning out. Here we keep to the right instead of to the left in meeting vehicles and pass vehicles going in the same direction to the left, reversing the English and continental rule.

This custom has puzzled foreigners as well as Americans. It arose from the fact that during Colonial times the ox team was in almost universal use. The driver in those cases almost invariably walked, and always upon the "near" or left hand side in order to have his goad in his right hand over his team. In meeting a vehicle, turning to the right was a necessity. Otherwise it would have been impossible to see whether the hubs of the wheels would clear each other. As the ox team was the universal vehicle during the earlier years of the colonies, the American rule of the road was thus established. It is now too late to change it, but with an automobile there is no reason why the driver should sit on the right hand side. He no longer needs to have his right hand free for the whip, in fact his right hand is needed for levers, which ought to be placed near the center of the carriage. Some manufacturers recognizing this fact are placing the drivers on the left hand side, where he belongs, and where he will be in the best possible position to avoid accidents when meeting carriages.

### Grand Central Palace Show.

The dates from the 14th to the 24th of November next have been decided on for the automobile trade show at the Grand Central Palace, New York. The New York horse show is to be held at this time, and it is expected that there will be a large number of visitors in the city at that time. The Grand Central Palace covers the block between 43d and 44th Sts. on Lexington Ave., and will afford a grand exhibition space for automobiles and accessories. Charging stations are to be established and other facilities for the care of the automobiles. Diagrams of spaces are ready and can be had with full particulars by addressing Mr. Marcus Nathan, 428 Lexington Ave., New York city.

### Automobile Excursions.

Trips by automobile have proved so popular in England that a company has been formed to conduct excursions of this kind. A club guide has been issued for the year 1900 setting forth the trips which will be undertaken, together with the accommodations offered, points to be visited scenery, rates, etc. These trips are made to any part of the British Isles, and are from a day's outing to a week or more in length. Meals and all accommodations are provided. Particulars of trips of a week each in Jersey, Isle of Man, Isle of Wight, Guernsey, etc., are given. Another feature offered by this company is membership in the Motor Car Excursion Club, that entitles members to discount of 15 per cent. of all charges, the membership fee is deducted from charges of first excursion taken by the member, a \$500 policy against accident on any excursion taken, and a certain number of free rides. This promises to be a very popular undertaking judging from the success reported last year of excursions similarly conducted. It would be much more pleasurable to substitute an automobile for the horse-drawn coach which is used by coaching parties in this country. Last season a number of instances were reported of horses dropping in harness on long, fast drives of such parties, and the automobile would certainly be a humane substitute.

### The Traction Engine in an Army Train.

A newspaper correspondent with the British army in South Africa thus describes the use of the traction engine along the Tugela: "The much-laughed-at score of Aldershot traction engines did not stick or flounder in the mud, but lumbered about doing duty with comparative ease and considerable regularity. Their flanged grips upon the wheels gave them a sure bite of the ground, which in one or two places they churned up rather deeply. A by no means overloaded wagon stuck in the middle of Blauwkran's Drift, close to Frere station. Eighty oxen were tried, and were unable to move the wagon an inch. It seemed as if the whole column must wait until the vehicle was carted off. A traction engine was requisitioned to try its powers, the enormous span of cattle were taken away, and a steel hawser was passed from the engine and made fast to the disselboom. Then steam was turned on, and with snort and whirr the steamer walked away with the wagon, conveying it to some distance to a high and dry part of the roadway."

One of the events at the Milwaukee meet of the L. A. W. next summer will be a ten-mile motor cycle race for amateurs. A twenty-mile championship motor cycle race will also be run at this time. The prizes for the first race will be a cup and \$50 for the second.



**The Locomobile Surrey.**

Although the dos-a-dos automobile is very popular in this country, yet the surrey to many appeals on account of the greater comfort afforded. All face the direction of travel and are accommodated with equal advantages. While there are a number of builders of the former, the Locomobile Company of America was the first to place on the market a steam surrey.



THE LOCOMOBILE SURREY.

The standard style of this carriage is shown herewith. Its weight empty is 654 pounds, and when carrying its full capacity of water and gasoline 885 pounds. The extreme length is nine feet four inches, and the width is four feet and seven inches. The

The engine is four-horse power, which is sufficient for all grades and any speed for which the roads are suitable. The wheels are steel with three-inch pneumatic tires. It makes a very suitable automobile for a family or a party of four.

**The New England Automobile.**

The steam carriage of the New England Motor Carriage Co., for which Howell &

The general design of this automobile is best shown by the accompanying illustration. Its weight is 400 pounds exclusive of supplies. These will add a couple hundred pounds. The tanks hold 20 gallons water and 6 gallons gasoline. The distance that these supplies will drive the automobile depends on the skill of operator. It is well known that in the use of horses some drivers are able to get more speed or a greater number of miles out of a horse than another. The same is true of an automobile, whether it be steam or electric. One person will be able to nearly double the distance of another who knows less about husbanding his power or taking advantage of the road.

The engine is of nominal four-horse power, sufficient for a speed up to nearly 40 miles an hour. Increasing the boiler pressure adds greatly to the engine capacity. While ordinarily 125 pounds is

**The Clark Steam Carriage.**

A steam dos-a-dos with five passengers is shown in the accompanying illustration. It is a style of automobile that promises to be very popular, and, as has been often proved, it is not necessary that the operator shall wear male attire. The steering and speed controlling is by two handles, one for each. The operator may sit on either side.

The total weight ready for the road is 1,200 pounds, which includes, of course, the weight of water and fuel. The carriage body conceals almost entirely the driving mechanism. The frame is steel tubing, the front axle is hollow and rear axle solid. It is so balanced as to allow for inequalities of the road.

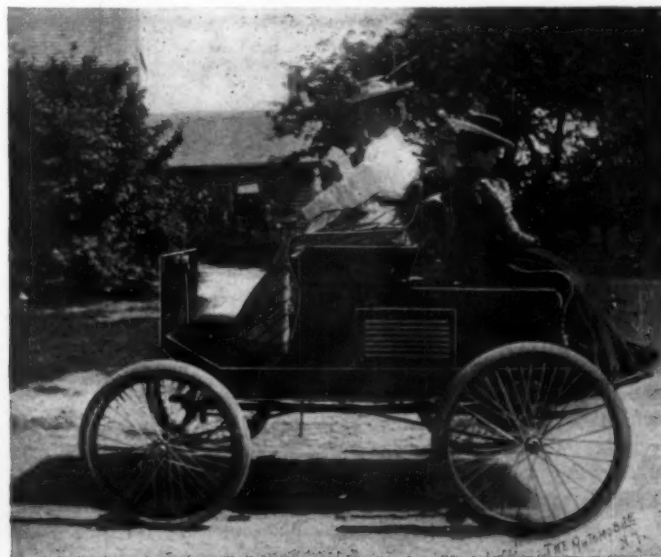
The band brake is operated by the foot



THE NEW ENGLAND AUTOMOBILE.

seats are heavily upholstered, and there is ample space for the feet and limbs. This is a very important item in an automobile that is to be used for long trips, which is a feature desired by all but which loses its pleasures when taken in a cramped position.

is reached the surplus returns through a bypass to the water tank. The fuel supply is regulated by a diaphragm acting so as to cut off entirely the flame beneath the boiler when pressure exceeds a certain point, and starting again as it passes below.



THE CLARK STEAM CARRIAGE.

pedal. The wheels are 30 and 34 inches in diameter, with three-inch pneumatic tires. The power is steam generated in a water tube boiler over a specially constructed gasoline furnace. Mr. Edward S. Clark, 272 Freeport St., Boston, is the builder of this automobile.

## Club News and Views.

### Club Directory.

Automobile Club of America, Homer W. Hedge, secy., 120 Broadway, New York.

Automobile Club of Baltimore, W. W. Donaldson, secy., 872 Park Ave., Baltimore.

Automobile Club of Chicago, Andrew R. Sheriff, secy., Calumet Club, Michigan Ave., Chicago.

Cleveland Automobile Club, E. L. Strong, secy., Cleveland, O.

San Francisco Automobile Club, B. L. Ryder, secy., San Francisco, Cal.

### San Francisco Automobile Club.

The first automobile club of the Pacific slope is that just organized at San Francisco. Its object is to promote the interests of the self-propelled vehicle, the improvement of the public highways and the fraternity of automobilists. Among the list of charter members occur the names of Hermann Oelrichs, Adolph Spreckels, Charles E. Moore, T. J. Sparks, J. M. Wilkins, A. G. Wieland, W. R. Woolsey, Hiram T. Bradley, B. L. Ryder, etc.

### The Club Show.

The committee having the matter in charge is at work on the preliminary details of the automobile exposition to be held at the Madison Square Garden the first of November under the auspices of the Automobile Club of America. Contests between automobiles and the drivers or operators will be the main feature of this show. During the military show held at the Garden several members tried the track with their automobiles and reported it as being well fitted for the purpose. Spaces will be reserved for the exhibition of vehicles and accessories.

### Racing Rules.

The committee of the Automobile Club of Great Britain and Ireland have framed rules and regulations on the basis of those obtaining on the Continent, and providing that all purely automobile contests shall be carried out under its rules and regulations, and that any person taking part in any motor contest in the United Kingdom which is not held under its rules and regulations shall forfeit his right to take part in any other contest, does so, not with a view to interfering with legitimate enterprise in the promotion of races and competitions, but in order that all motor competitions may be carried out under the same rules and for the securing of fairness in running and uniformity and correctness of records. Rule 99 provides that registered automobilists who are not members of the A. C. G. B. I. are to be represented on the Competitions Committee by four representatives elected by non-members of the club. The club has no control over

races of motor vehicles in which the mechanical propulsion is aided by muscular power, as its rules and regulations will only govern races which are purely tests of mechanical propulsion of vehicles without the aid of muscular effort.

### The National Highways.

On the evening of the second of this month Maj.-Gen. Nelson A. Miles is to be the guest of honor at a dinner given at the Waldorf-Astoria, New York city, by the Automobile Club of America. Gen. Miles is at the head of the National Highway Commission, and has as colleagues Col. Samuel E. Tillman, of West Point; Col. Peter Michie, also of West Point Military Academy; Major Richard L. Hoxie, Corps of Engineers, U. S. Army, and Francis E. Stanley, of Newton, Mass.

This is entirely a voluntary commission, and its formation is due to the efforts of Mr. John Brisben Walker, editor of the *Cosmopolitan*. The report of the commission, with such recommendations as it may see fit to offer, is to be brought to the attention of Congress. While the majority members are army men yet their experiences on Government surveys have given them a superior knowledge of the highways of this country and the possibilities in that direction.

### The International Event.

Mr. Alexander Winton expects to sail for Paris this month, taking with him the special racing automobile he has just completed. The motive power is a gasoline motor with single cylinder, as built by the Winton company. Upon this automobile is centered the hope of bringing the Gordon Bennett cup to this side of the Atlantic. Mr. Winton's family will accompany him, and possibly some representative of the company.

At a recent meeting of the Automobile Club of America Mr. Clarence Grey Dinsmore was appointed to represent the club on the racing board, and Mr. John H. Flagler a substitute. Mr. A. C. Bostwick, chairman of the racing committee of the club, will also be at the race.

### Like Yachting.

Automobilism is treated by the Automobile Club of Great Britain as being akin to yachting, inasmuch as muscular power is not a factor of success, but success is obtained by the combination of excellence in a machine and skill on the part of the driver. The committee are therefore of opinion that, as in yacht racing the sailing of the yacht may be undertaken either by the owner or a paid master, so in automobile racing an owner may race against a paid driver either for a money prize or for a trophy.

### Papers at the Automobile Congress, Paris.

History of Automobilism in Various Countries, M. Gaston de Chesseloup-Laubat; Steam Motors, M. Rene Varennes; Explosive Motors, M. G. Forestier; Electric Motors and Tractive Effort, M. Hospitalier; Various Motors, M. Barbet; Transmission Gear, M. Gaillardet; Frames, etc., M. Jeantaud; Wheels, Axles and Tires, Capt. Ferrus and A. Michelin; Driving and Management, Carlo Bourlet; Power to Employ for Automobiles, M. Hirsch; Standardization of Gauges, Bolts, etc., M. Sauvage. Copies of these papers will be supplied to the members of the congress previous to the session at which they are to be read.

### Club Run in Deep Snow.

A scheduled run of the Automobile Club was to be held on March 17th. The weather on this day was so disappointing that only three members attempted to start. There had been a snow storm the day before, and the ground was covered with some seven inches of snow.

The starting place was to be the Waldorf-Astoria, and the Ardsley Casino was to be the turning point. Ardsley is about twenty-three miles from the Waldorf, and the roads are exceedingly hilly and rough in the best of weather. That day they were particularly discouraging; in fact, they looked impassable.

The start was to be promptly at ten. Mr. Fischer started in his carriage from Marion, N. J., at nine o'clock. The carriage was a gasoline, with two speeds ahead, and a slow speed for reversing. Between Marion and the Jersey City Ferry is a long hill, rough and hard to climb under favorable conditions. The carriage refused to climb it on the slow forward speed. As the reverse was much slower, the carriage was turned about and backed up this hill without further trouble. Arriving at the ferry, there was a delay of about an hour on account of a number of trucks which blocked the way. In New York it was utterly impossible to get along very fast, as only a few streets had been cleaned of the snow, and these, of course, were very crowded. The Waldorf was reached about 10.30.

Mr. Bostwick, in a gasoline, and Mr. E. E. Schwartzkopf in a steam carriage, had left about 10 o'clock. No one in the Club thought the trip to Ardsley and return could be made that day without some mishap. Ordinarily, the run one way can be made in about an hour and thirty minutes. It was remarkable that none of the three carriages had any serious stoppage on the way. No better test of the practicability of automobiles could have been made.

The average time of running each way was about two hours. Mr. Fischer made the return trip in two hours and five minutes.

The motor vehicle defense association that was organized in England some months ago is reported to have met the wishes of a large number of automobilists who have paid their pound and joined the association. G. R. Helmors, 84 Chancery Lane, London, is the secretary.



**The First Hydro-Carbon Break.**

The accompanying illustration shows what is probably the first hydro-carbon break to be built in this country. It was recently completed at the Marion factory of the Automobile Company of America. Its carrying capacity is twice as great as that of the ordinary Stanhope phaeton, without being any heavier. The seats are



THE FIRST HYDRO-CARBON BREAK.

broad, so that three persons can be accommodated. The total weight is about 1,250 pounds.

The motor is a three-cylinder, balanced, four-cycle, gasoline engine. The driving mechanism is simple and compact. The motor can be started by simply turning a switch. There are no oil cups, and the fuel is automatically supplied. The motor is of ten horse-power, and speed can be regulated up to twenty miles an hour. On the reverse, or backing, the automobile, a six-mile speed is obtained.

The wheels are tangent spoke steel, with three-inch pneumatic tires. It is claimed that in the operation of the brake all vibration of the motor is eliminated, and no odor can be detected from the exhaust. The driver has complete control of the speed, and both forward and backing movement, as well as the steering of the vehicle.

**Lear's Motocycle.**

Oscar S. Lear, of Columbus, O., has completed a motor bicycle that is very neat in appearance but differs materially from those now on the market. One of the most noticeable features is the fly wheels that are not enclosed but are placed uncovered on each side of the motor. The gasoline tank and carbureter are placed above the motor between the rear wheel and the upright post of the diamond frame. The batteries and spark coil are suspended from top tube. Complete it weighs about 75 pounds, and price will be \$200.

**Light Delivery Gasoline Automobile**

After several years of careful experiment and a careful study of the requirements of a light delivery, the Electric Vehicle Co. now offers the light automobile delivery shown in the accompanying cut. It is built by the Columbia & Electric Vehicle Co., of Hartford, Conn.

Electric ignition from two cells of storage battery is used after tests of magneto, hot tubes, etc. A jump spark from a new vibrating coil is used. The batteries are easily charged when exhausted. The method of control involves the varying the points of ignition, and the lever acts against a spring which will return it to slow speed automatically when released. This lever is moved by the knee of the driver. This arrangement is in reality a safety device which guards against carelessness and adds to the durability of the motor.

A boy of average intelligence can operate this delivery and take entire care of it after having been once instructed in its operation. It is especially intended for the quick delivery of light parcels. A large store in a Pennsylvania city tried this automobile delivery for a week in February, and some of the trips were as follows: Covering a trip of 4 miles, 32 packages delivered in 65 minutes; covering a trip of 4½ miles, 31 packages in 70 minutes; covering a trip of 6 miles, 33 packages in 90 minutes.

Another store the week before Christmas used one each day, and the deliveries varied from 74, the lowest, to 110, the highest for one day.

It is very easily managed, the one guiding wheel carrying it in and out among the street traffic with great facility. The weight is 900 pounds, and gasoline is carried for 100 miles and water for 25 miles. It will carry loads up to 500 pounds at a maximum speed of 11 miles an hour.

**The Jacks Runabout.**

The Pacific slope seems as enthusiastic over the automobile as any section of our country, and has already produced a number of novel vehicles. The gasoline runabout of the Jacks Autobain Co., of Napa, Cal., is equipped with a four-horse power



COLUMBIA LIGHT DELIVERY.

to help over a bad piece of road. The cylinder is water cooled, a method which has been found to decrease the cost of manufacture and increasing the capacity. The method of lubrication has been very carefully worked out, as the automobile will probably be handled by persons unaccustomed to the care of machinery.

motor, which with connecting apparatus is mounted on a separate frame hinged to the rear axle. Whatever vibration there may be is absorbed in the suspending frame and springs, and the passengers are ignorant of it. Electric ignition is used, and a specially constructed muffler. Steel wheels and pneumatic tires are used.

# The Automobile

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The total number of applications for patents during the year 1899, according to the report of the commissioners, was 41,443. There were 25,435 patents granted, 92 reissued and 1,649 trade marks registered. The surplus for the year from this department was \$113,673.

## Licenses.

There seems to be a general agitation of the question of licensing the drivers of automobiles. Several cities now require licenses to be taken out, and a bill before one State Legislature provides that all drivers of automobiles on public streets shall secure licenses. Would it not be as well to require a license from all drivers of vehicles or to require them to carry in a conspicuous place on the vehicle a registered number in large characters as a means of identification? Such a plan would not be without a precedent and would help to give greater security to human life. If the matter were carefully investigated it would probably be found that the accidents due to careless and incompetent driving of horse vehicles would show a greater proportion of accidents than of automobiles. It has been pointed out that the automobile and its driver has but one brain, while the horse vehicle has two connected by the reins, over which the will of the driver is transmitted. The second brain does not always carry out the will of the first, and when it does the action is never as quick as the automobile. If licenses are to be the thing let us be generous and require one of all drivers.

## High Speeds.

The heavy fines and in several cases terms of imprisonment imposed on automobilists in France should be a warning to those automobilists whose enthusiasm takes them along at speeds above the prescribed limit. Cases of this kind become so common in the above country that the heavy penalties were imposed to repress this tendency. The same craze seems to have taken hold of American automobilists. On one day last month three drivers of self-propelled vehicles were arrested in New York city for fast driving. In several cases persons well known in automobile circles have found themselves at the police station for this offense. Drivers should provide themselves with a speedometer and a timepiece if necessary to keep within the limits of speed. It is a dangerous tendency, and offenders should not be dealt with too leniently.

## Higher Prices.

Attention has been previously called to the low prices at which automobiles were promised a few months ago, and the statement was made that prices would be much higher. This has proved to be true, and four or five companies have advanced the prices of their vehicles within the past two months. While there are a number of builders who are aiming at a light vehicle at a low cost there are now preparing to enter this industry two or three companies who aim at a heavier, more substantially constructed automobile, and at a cost exceeding in one case at least by forty per cent the price at which self-propelled vehicles for the same purpose have been sold. These builders liken the automobile

to the locomotive as to its life and efficiency. They say their automobiles should last for years, and while it may get behind the times as locomotives do, yet will be serviceable for several decades. The belief is also expressed that we shall not see the rapid changes in the construction of automobiles when once the industry is established, such as have been witnessed in the bicycle industry.

## Automobile Tires.

The smooth, quiet running of the rubber tire has made it very popular for pleasure carriages. It is not alone the smoothness or the quiet running that makes this kind of tire almost a necessity for the automobile. On smooth pavements on rough roads, or wherever it may be used, the automobile operates to best advantage when fitted with rubber tires. Every fraction of an inch that a driving wheel slips is so much power lost. The rubber tire is least apt to slip, and while for racing automobiles the pneumatic is far superior to all others for ordinary service, other forms of tire have proved very efficient. Experiments have shown that the use of pneumatic tires of roads of every kind reduces the tractive effort required with iron tires. This economy is much greater on bad roads or roads deep in mud or snow. In point of durability recent improvements in the construction of tires have considerably lengthened their life. Records of several thousand miles have been made for a set of tires. The tires of racing and high-speed automobiles are comparatively short lived, since with high speeds the abrasion of the tire is much greater, and, owing to the high velocity of the impact stones and obstacles will cut the tire that at low speeds would have no effect upon it. The strain on these tires is not inconsiderable, and there are many instances where the lugs have been sheered off and the whole tire released under the heavy strain put upon them. It is, however, encouraging to note the advancement made in the design and construction of automobile tires, which keeps pace with the requirements of the industry. In another part of this number will be found some important designs of automobile tires.

## Water Coolers

It has been proved by trials of several years' duration that air cooled gasoline motors above two-horse power per cylinder is impracticable. Even with single-cylinder motors of two-horse power the heavy fall in power after a short run shows the imperfect radiation of heat. With the water jacket the mechanism of the automobile is increased in weight and complexity. This, however, seems unavoidable. The step from the very light gasoline automobile to the larger is a very long step, involving the addition of a method of cooling the cylinders. To overcome this many efforts have been made but so far unsuccessfully. Improvements in the water circulation and



radiating system have been more successful, and a number of devices have enabled the builders to accomplish the same results with ten gallons which formerly required three times as much. But to this part of the equipment of the foreign makes of gasoline automobiles is due a considerable portion of their weight. It is considered better practice to carry a little more weight than to run the risk of having to stop in order to allow the cylinders a chance to cool.

#### Liquid Air.

The advertisements of the liquid air companies who have stock to sell are again making their appearance, and they contain the same extravagant claims as those of a few months ago when attention was called to them. In the meantime no great advancement or discoveries have been made as far as are known which will increase the usefulness of liquid air. That air can be liquified and the remarkable things it will accomplish is a wonderful discovery and of great scientific value, but liquid air in a commercial sense is quite a different thing. In a recent number of the Scientific American Mr. Hudson Maxim has an article in which he takes up the claims of the promoters that liquid air will reduce the cost of generating power and of refrigeration. Regarding the first he says: "The engines of the 'Teutonic' develop about 20,000 horse power. This would require 242 tons of liquid air per hour, 5,829 tons per day, and 40,807 tons for a seven-day voyage, considerably more than enough to float the vessel. Some have made the claim that liquid air can be made as cheap as 2 cents per gallon. Let us assume for argument's sake that such be the cost. This would be \$4.28 per ton, and liquid air enough to take the 'Teutonic' across the ocean would cost \$174,560. In other words it would cost this sum to save half the coal bill."

There are other difficulties which have not been met in the way of using this power. One is means of storing, another a suitable motor for transforming the power into mechanical motion.

#### A Question of Speed.

In a speech delivered before an English county council the speaker well said that any speed becomes dangerous if the vehicle cannot be pulled up in a short space. A charging traction engine at five miles an hour is just as dangerous as a motor car at 20 miles an hour if the object is so near it that it is unable to pull up in time. The question of speed is really one of brakes. A properly constructed motor car can be pulled up in a far shorter space than a horse-drawn vehicle. By law the motor car must be provided with two brakes; these two brakes can be used at the same time; as a matter of fact, the driver of the motor can have both brakes hard on in a much shorter time than the driver of a horse can apply the one brake, even if he has one, and transmit through the reins to the bit,

to the mouth, to the brain, to the legs of the horse the notion of stopping. For this reason I maintain that a higher speed for motor cars can be safely allowed than is allowed for horses.

#### Gottlieb Daimler.

The death last month of Gottlieb Daimler, after whom was named the Daimler motor of world-wide reputation, takes away another of those who have contributed largely to the success of the automobile industry. More than thirty years ago he became associated with Dr. Otto, who at that time was endeavoring to perfect his gas engine. At their little workshop at Deutz, on the Rhine, was invented the celebrated Otto gas engine. For ten years Herr Daimler remained as managing director of the company, which successfully undertook the building of these engines. This engine, as it seemed to him, was limited in its scope, requiring gas as it did from gas works, and he undertook the production of an engine using gas from petroleum, resigning from the company in order to give his entire attention to this work. To him is attributed the abolition of the slide ignition valve and the substitution of ignition tube firing. The works of the Daimler Motoren Gesellschaft at Cannstatt, Germany, attest the success of this motor. While its first and great success was in driving launches, the possibilities for vehicle propulsion was early considered. The first attempt to construct an automobile at these works is said to have been about fourteen years ago. The work was undertaken in France by Panhard & Levassor, in England by the Daimler Company, and in the United States by the Daimler Mfg. Co. Gottlieb Daimler was born at Schorndorf, Wurtemberg, sixty-six years ago.

#### The Pan-American Exposition.

The directors of the exposition to be held at Buffalo next year seem to have early recognized the ineffectiveness of the stationary display of self-propelled vehicles and are already considering the preliminary plans for contests, races and moving exhibitions. The plans of the exhibition grounds include an athletic field with a quarter-mile track, sufficient for a certain class of contests. This space, with accommodations for 25,000 spectators, covers a plot 850 by 500 feet. Mr. Thomas M. Moore, chief of the transportation exhibits, has sent letters of inquiry to the prospective exhibitors in this line asking for suggestions regarding the display of automobiles by evolutions, contests, etc., and reports most favorable responses. This part of the exposition under the plans now being considered will form one of the great attractions. The opportunity to see in motion the great variety of automobiles will be well worth a trip to the city, and if some of the plans suggested are followed out it will be a grand rendezvous for automobilists.

#### New York to Philadelphia.

A pleasant run for an automobile is from New York to Philadelphia. The distance is excellent for a day's run, and the route all that can be desired. The trip was made several times last year and will be undoubtedly more popular this year. The old-turn pike through Newark to Elizabethport is an excellent strip to get the machine warmed up and in good working order. From there good time can be made through Roselle, Plainfield, etc. to New Brunswick. Excellent bits of scenery, and in the Raritan River district much that will hold the attention and cause the wish that the day were to be spent along the way. Princeton will arouse historic memories, as will many points along the route. Crossing the river at Trenton the towns of Pennsylvania will bring much of interest, and the run down the river can be made rapidly. If all goes well from here the evidences of the city of Brotherly Love will soon come into view.

#### Name Your Automobile.

It has been suggested that every owner give his automobile a name, as he would his yacht, and have the name conspicuously painted on it. Some of our cities require numbers to be displayed as a means of identification. The name would answer the same purpose and would not savor so much of the hired vehicle or the license clerk. Automobiles intended to travel up to the limit of speed allowed could have the letters of a size than can be readily distinguished. Those traveling at more moderate speeds could be of a proportionate size.

#### Bill to License Automobiles in New York State.

A bill has been introduced in the New York State Assembly by Mr. Apgar, of Westchester county, entitled an act to regulate and govern the running and operating of all motor carriages and vehicles other than railway or traction engines upon the highways of the State of New York. It provides that all operators of automobiles must obtain a license from an examining board. Local boards in cities, counties or towns that pass on the qualification of engineers or inspect boilers are to constitute examining board. If no such board exists the supervisors are to appoint a person.

Each owner is to pay an examination fee of \$1 in addition to a license fee of \$2. Board is to grant licenses to persons who upon examination are judged competent for a period of one year. The board is also empowered to revoke licenses for a period not longer than six months upon satisfactory proof of drunkenness, incompetence and reckless driving. Persons violating this act shall be guilty of a misdemeanor, and upon conviction shall be subject to a fine of not less than \$10 nor more than \$100. The act is to take effect immediately upon its passage.

### Automobile Notes.

It is reported that the noted French automobile builders, Panchard & Levassor, have orders on their books for automobiles amounting to \$3,000,000.

The war department of Great Britain has asked for tenders for five motor wagons capable of carrying two tons each at the rate of five miles an hour.

The first woman to receive a license from Chicago's automobile licensing bureau is Miss Julie M. Bracken, who is connected with the Woods Motor Vehicle Co., and an expert in operating the levers.

The Prince of Wales recently ordered a six-horse power Daimler automobile for his own use. This automobile is to be delivered the first of this month, and is said to differ considerably from any turned out.

According to the report of the French customs department there were exported during the year 1899 automobiles valued at 4,260,000 francs, and imported during the same time to the value of 458,000 francs.

Gold medals were awarded at the Birmingham, England, show as follows: A. C. Edge, Ariel motor-tricycle; J. W. Stocks, Ariel motor-quadracycle; J. Palethorpe, Mors light automobile, and Motor Mfg. Co. phaeton.

The thousand mile tour of automobilists, London to Edinburgh and intermediate towns, is to commence on April 23d. At the end of the tour the automobiles that compete are to be exhibited at Prince's Skating Club.

The new light gasoline automobile run about of the Columbia company is expected to be ready for delivery the first of August next. Although we are not permitted to publish details this automobile promises to be of a very high order.

It is a custom in France to tax bicycle riders as well as in certain counties of our own States. Under the new plan recently proposed the tax can be paid for four years and a plate is issued good for that time.

It has been arranged so that automobilist, members of the national club, can travel from Belgium into France and return without the payment of custom dues, the club guaranteeing the fee should any be required.

A paper read recently before the Automobile Club of Great Britain sums up the drawbacks to automobile manufacture in Great Britain to two things: Unsound finance and want of practical automobilists on the boards of the companies concerned in manufacture. It is probable that America will be found suffering from the same drawbacks when a summing up occurs on this side of the Atlantic.

The Monobloc accumulator is a new design that has recently been brought out for traction purposes. The positive plate is formed of a compact block composed of 120 sheets of lead, each .02 inch thick, held

together by a hard lead frame and four corners burnt on. The plates are perforated by holes .4 of an inch apart. The negative plates are composed of quadrangular tubes .02 inch thick, lead hardened by a little antimony. The tubes are filled with spongy lead and are provided with many openings. Tests of cells of this type, used on street cars, have extended over a year and have been reported very successful.

A race occurred one day last month between an automobile and three bicycles in relays. The bicycle riders were policemen, and were called upon unexpectedly to take part. Policeman Stover saw the auto-

mobile making fast time and attempted to overhaul it, but became winded at 72d St., where Policeman Van Keuren took up the race, but at 92d St. Policeman Vanderpoel came in on a foul and arrested the driver for exceeding eight miles an hour.

The heavy snow storm in Western New York last month gave the automobiles a chance for a very severe test. At Rochester, where the snow was reported four feet deep on the level, J. J. Mandery, of the Rochester Automobile Co., had a locomobile out most of the day just to show the people what it could do. This company has the locomobile agency for nine counties in the western part of the State.

### Correspondence Department.

Space will be given on this page to letters concerning the Automobile, its operation or construction, to accounts of tours or runs, routes of travel, good roads, etc. Discussion of subjects concerning the Automobile is solicited. When requested by correspondents their names will not be published, but must always be given in the communication to the Editor.

Philadelphia, March 29th.

Editor AUTOMOBILE:

The questions of gauge and wheel base for motor carriages, that is, the distance between the axles and the width of the carriage between the tires, should receive much more careful attention than has been given them up to the present time. Builders are making their carriages as short as possible, and for the lighter machines are diminishing the width considerably. The electric carriages so far built are noticeable for their uneasy, disagreeable pitching motion. Even on a first-class pavement they swing fore and aft like a ship in a head sea. Many people find this motion not only disagreeable, but actually sufficient to produce sea sickness. If any reason existed for using a short wheel base, this might be excused, but none has so far been presented. On rough roads the long wheel base is a great advantage by reducing the strain on the frame and easing the motion of the body itself.

B. F. F.

Walton, Mass., Mar. 23, 1900.

Editor THE AUTOMOBILE.

Dear Sir: I hear lots about automatic regulation of steam automobiles. Is such a thing possible, except on good roads without heavy grades? A steep hill or a sandy road will need more steam, and if the fact that more steam is to be needed could be communicated to the regulating devices, then the extra amount of steam would be gotten up. If the steam isn't there you are going to slow down until the steam is generated; it may be only an instant or it may be a minute or two. It makes you think of a tired horse. The operator can remedy this. He can look ahead and have his steam up, but that is not automatic regulation. If any one has a scheme that gives automatic regulation on all kinds of roads, I would like to hear about it. I see how one can carry a boiler full of steam at high pressure just under the safety valve notch and get over anything, but you won't have much of a story to tell about the amount of supplies you used on that plan.

Yours truly,

E. R. N.

Pan American Exposition, 1901.

Buffalo, N. Y., Mar. 20, 1900.

Editor THE AUTOMOBILE,

New York City.

Dear Sir: Your kind letter of the 13th, enclosing clipping from a recent number of THE AUTOMOBILE, containing suggestions regarding automobile features of the Exposition, was duly received. It is the intention of the management to have a comprehensive exhibit, but the details regarding races and contests, have not as yet been arranged.

Very truly yours,

GEO. BLEISTEIN, Chairman.

Evanston, Ill., March 28th.

Editor AUTOMOBILE:

Dear Sir—Kindly inform me the publication, volume and page that will enable me to post myself on the following questions: (1) What is automobilism; its history? (2) What is a motocycle; how constructed? (3) What is an autocar; how constructed? (4) What is a cyclosack; and greatly oblige,

J. D. W.

A.—(1) See THE AUTOMOBILE, Vol. I., No. 4, page 50; also Vol. II., No. 3, page 46; and in France, see "North American Review" for 1899, pages 399 et seq. (2) An automobile of bicycle construction. It may be a motor bicycle, tricycle or quadracycle. (3) An English term for an automobile. (4) Must be a word recently coined.

Citizens' National Bank Building,

Norfolk, Va., March 6, 1900.

Editor AUTOMOBILE:

Gentlemen—I duly received your favor of the 3rd inst., also the paper called THE AUTOMOBILE. Please accept my sincere thanks for same. I would be very much obliged if you would ask some of your friends in New York to mail me their catalogues, as well as their terms to represent them in Norfolk, Va. I hope this will not be too much trouble for you, and I will gladly reciprocate this favor whenever an opportunity avails.

Yours very truly,

CARL HUGO ARNOLD.



**On the Stage.**

One of the attractions at a London theatre is the automobile handled by Mr. E. J. Coles. This automobile, a Benz Ideal, weighing nearly a half ton, is driven up an incline 18 feet long on a gradient of one in four to a platform 5 by 6, and down a flight of stairs of 17 steps 10 inches wide



AN ENCLOSED PHYSICIAN'S AUTOMOBILE.

and 4 inch risers. He also rides in and out among blocks and flags in graceful curves that tend to convince one of the perfect character of the automobile.

**Good Roads Notes.**

New Jersey has built 440 miles of good roads at a cost of \$2,000,000. It is such a good thing that there are petitions in for 500 miles more.

The automobilists of Great Britain are making a fight for more favorable terms from the railroads for the transportation of gasoline and automobiles.

Mr. Edward A. Bond, New York State Engineer, believes from his experience in road building that the best road is a 15 or 16-foot macadamized strip, which costs about \$8,000 a mile.

United States Commissioner Peck and a number of members of his staff are now in Paris preparing for the exposition. One of the original ideas introduced is the use of a number of American college students as guides, interpreters and guards.

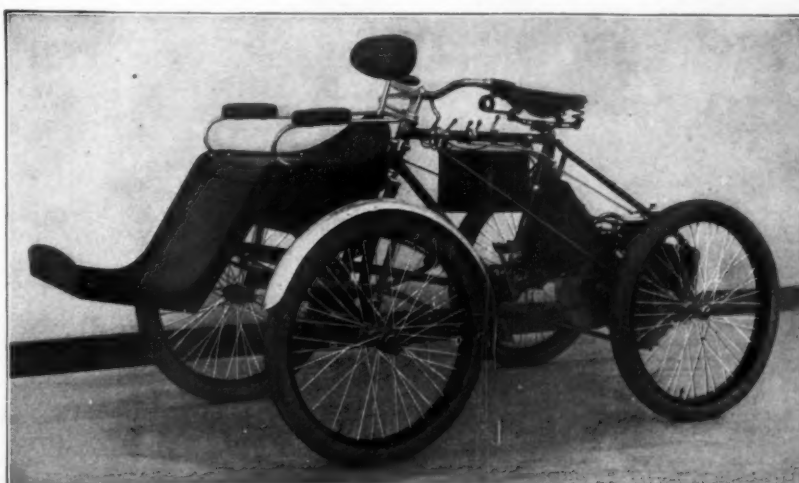
The State of Massachusetts has built something like 300 miles of road at an expense of nearly \$3,000,000, an average of \$10,000 a mile. It is the present plan to build 2,000 miles of such roads, and they will be so distributed that no one in the State will be more than a mile or two from some part of this system. While the State is building these roads each county is to repay the State 25 per cent. of the cost of the roads constructed within its boundry.

**An Enclosed Physician's Automobile.**

One of the novel styles of automobiles designed by Mr. Elmer A. Sperry, the electrical expert of the Cleveland Machine Screw Co., is shown in the accompanying illustration. It is an enclosed carriage for a physician, but equally well adapted for anyone who desires an automobile which will protect the occupant from the inclemences of the weather. The places for the doctor's instrument and medicine cases can be used for other things.

This carriage body is mounted on an intermediate form of running gear, between the heavy brougham and the light run-about. The motor is three and a half horse power. The system of control is that devised by Mr. Sperry, employing a single steering handle for all operations. The braking, steering, speeds forward or backward, are obtained by the movement of this one handle.

The speed may be increased as high as 15 miles an hour, as an emergency call might require a swift journey. A key used



THE "AUTOGO" WITH ASTER MOTOR.

in the controller can be removed when the automobile is left at the curb, as a guard against the possible meddling of boys. An electric headlight of good power is fitted in the front of the carriage. It is a very light, serviceable looking automobile, and should prove very popular.

A license has been granted Miss Annie Rainsford French, of Washington, D. C., for operating a steam automobile.

**Talks on the Automobile.**

The New York Electrical Society listened to several talks on automobiles at its regular meeting held last month. Mr. A. L. Riker presented the electric automobile; Mr. C. J. Field, the gasoline, and Mr. J. A. Kingman the steam. The meeting was well attended and all took a lively interest in the subject. The lantern slides helped to illustrate many styles of vehicles and special parts in their construction.

**Russian Restrictions.**

In Russia the automobile is duly registered by the government official, to whom a drawing of the vehicle is sent with the application. The vehicles are divided into three classes, the private, the public, and the goods automobile. The first two can be used on all thoroughfares, but the third class is restricted to particular streets. The drivers are in all cases examined, and if found competent are given a certificate and a number to attach to vehicle. The place of housing the automobile is placed on record. The limit of speed is about eight miles an hour. A horn and two lamps must be carried.

**The "Autogo" with Aster Motor.**

The "autogo" is now built with either the De Dion & Bouton motor or the Aster motor, for which the Waltham Mfg. Co. has recently received the exclusive American agency. The most notable difference between these motors is that while the flanges on the cylinder of the De Dion

motor are cast with the cylinder those on the Aster are of copper and are compressed around the cylinder head. The Aster people claim that this method is far superior to the other for cooling the cylinder. In other respects the motors do not differ greatly.

This type of motor is built abroad in a number of sizes and styles. For voitures a water cooled motor is made which is used extensively on the continent.

## AUTOMOBILE TIRES

The automobile tire is invariably a rubber tire. A rubber tire gives sufficient traction power on all kinds of pavements and in all conditions of weather. It is this fact more than any other that prescribes such tires first, last and all the time for self-propelled vehicles. There are also other commendable features which variously devised forms have emphasized.

The kind of tire an automobile shall have lies largely with the purchaser, whose wish is often influenced by the advice of the builder or the dealer. The character of the roads in the locality in which it is to be used will also have some influence in the selection of tires. The rubber tires now in use in this country embrace a large number of kinds of solid, cushion and pneumatic. While a solid tire is a solid tire, close examination brings to light a variety of forms, of sizes and of methods of applying.

**Pneumatic Tires.**—The pneumatic tire has reached its highest development during the past few years. Its cushion of enclosed air under high pressure forms an ideal tire as far as elasticity is concerned. The stone or unevenness of the road is folded within the yielding surface and the impact is absorbed by the

the portion of the tire confined in the rim. Of course the more the flexing is localized the more violent it is, and where a tire is embedded in the rim, a frequent cause of complaint is the cutting of the tire on the edge of the rim, which is nothing more than the result of this violent bending backward and forward of the tire at that point.

Fig. 2 shows the method by which the tire is held in place on the rim. Endless wire rings are incorporated into each edge of the outer cover. These rings are of the same size (diameter) as the ledge or shoulder which is shown in each side of the rim, and on which they rest when the tire is inflated. The inflation of the inner tube tends to force the outer cover off the rim, but this is impossible because the stiff wire rings in the edges of the cover are smaller than the rim and cannot pass over it as long as they are kept in place on the ledges or shoulders of the rim.

In this illustration the cover is not shown complete, but only the wire rings which are enclosed in its edges. One of the



FIG. 1 AND 2—THE DUNLOP TIRE.

elastic medium. Of pneumatic tires now on the market there are two rivals for first place, the single and the double tube.

**Double Tube Tires.**—One of the best known of double tube detachable tires is the Dunlop. Its construction has been greatly improved since it came into use. The fabric now used in these tires is capable of standing a strain of from 500 to 600 pounds to the square inch. Thus one ply of this fabric has the strength of several under the old method of manufacture. The shape of the tire is preserved, and the strain is taken evenly.

Very little of this tire is confined within the rim. The portion of a tire which lies within the rim cannot contribute anything to the flexibility of the tire, and the flexing, or bending back and forth of the fabric as it comes in contact with the road is therefore localized in a direct ratio with

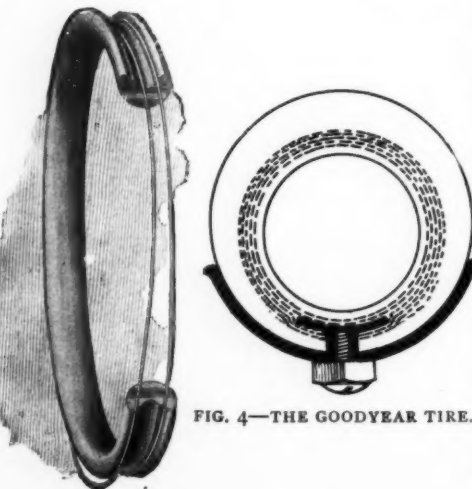


FIG. 4—THE GOODYEAR TIRE.

wires is shown in position on the ledge in the side of the rim. It will be readily seen that it is too small to come off the rim, but if its position be altered by pressing it down into the bottom of the rim, then on the opposite side of the wheel it will hang below the edge of the rim, and can be easily passed over it. When the tire is inflated, the edges of the cover are forced into place on the rims. The American Dunlop Tire Co.'s factory is located at Belleville, N. J.

Another form of double tube tire extensively used is that built by Morgan & Wright, of Chicago. Two styles are made, the pneumatic carriage and the cactus carriage. These are made in all sizes and diameters. The plan of these tires is shown in Fig. 3. The inner tube can be withdrawn for repair or inspection. The inner portion of the outer tube is composed of

several thicknesses of fabric thoroughly filled with rubber and covered with a heavy outer layer of rubber. With the



FIG. 3—MORGAN & WRIGHT TIRE.

different sizes variations are made in the plan of construction.

The opening for the removal of the inner tube is near the valve opening, and after inserting the tube the opening is closed by lacing.

**Single Tube Pneumatic Tires.**—Fig. 4 shows the Goodyear single tube tire for automobiles. The section also shows the method of attaching to wheel rim. The method of construction guards against all liability of the fabric to tear apart in sections, an occurrence which has not been uncommon in the history of tires. The fabric used is a very heavy one and there is between each one a heavy skim coat of rubber.

The tires are made in sizes from an inch and a quarter up to five inches. In height the sizes range from 26 to 36 inches. In tires up to two and a half inches in diameter five lugs are built into the tire, by which it is securely fastened to the rim, as shown in the illustration. In larger sizes of tires eight or eleven lugs are employed. The Goodyear Tire & Rubber Co., at Akron, O., are the manufacturers.

The Diamond Rubber Co. of Akron, O., is the maker of the pneumatic tire shown in Fig. 5. As will be noticed, the tire is fastened to wheel by lugs placed at intervals. The woven section of the tire is heavy on all sides, but is reinforced by several additional layers on the tread side. These layers are thoroughly filled with rubber, which also forms a heavy interior

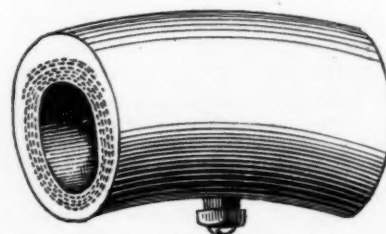


FIG. 5—THE DIAMOND TIRE.

and exterior covering. The thickness of the outer layer is greatly increased at the tread. This tire is made in all sizes for automobiles.

Three distinct forms of single-tube pneumatic tires are made by the International



Automobile & Vehicle Tire Co. The tough tread tire is used on vehicles of all weights, being made in sizes to suit the different requirements.

Sea Island cotton is used in the manufacture of the fabric, which is closely

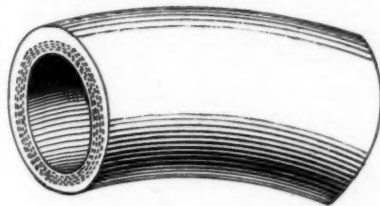


FIG. 6—INTERNATIONAL TIRE.

woven. The several thicknesses are firmly held together by a high grade of rubber, filling the interstices. The aim in the design of this tire is to produce a tire of small



FIG. 7—INTERNATIONAL TIRE.

size that will answer the same purpose as an ordinary pneumatic of larger size. This tire is made in sizes from two to five inches.

A unique form of pneumatic tire for automobiles is Bailey's tire, made by the B. F. Goodrich Co. The teeth that project from the tread form a cushion in addition to that of the main part of the tire. They destroy to some extent the suction of air under the tire and prevent slipping on wet pavements. This style of tire is made in

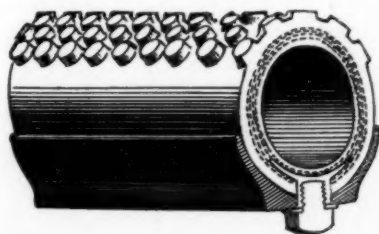


FIG. 8—THE BAILEY WON'T SLIP.

sizes from two to five inches in diameter. Fig. 8 shows this style of tire.

### A Pleasant Run.

From the Waldorf-Astoria, New York city, up Riverside Drive to Fort Lee ferry, across the ferry and north to Palisades Ave., west through Englewood and around

so as to return to West 66th St., was a very pleasant run made by Mr. Whitney Lyon and a companion the first of last month. The Fort Lee hill, a very heavy grade and the greatest drawback to this run, proved easy to the electric automobile which made this trip. This route is said to be thirty-eight miles long, and was made on a single charge of the batteries. The automobile was one recently built by the Cleveland Machine Screw Co., of Cleveland, O., and is known as the "Cleveland."

### An Automobile Fire Engine.

The mechanical propulsion of fire engines is a subject that early attracted the attention of inventors. Of the many efforts that were made to demonstrate its feasibility very little that was satisfactory remains. More recently, as the automobile has become popular, the automobile fire engine is again receiving attention. There seem to be no difficulties that are not surmountable at the present time.

An improved form of automobile fire engine was recently built by Merryweather & Co. of Greenwich, England, for use in India. The arrangement is such that the engine is made to drive either the pumps or the wheels by simply changing the gears. The chains that drive the rear wheels from the sprocket wheel on the central shaft are shown.

The speed of this engine is from fifteen to twenty miles an hour on level roads, but on hills this is considerably cut down, although the vehicle possesses good hill climbing qualities. The engine has seats for firemen and the forward one is occupied by the driver, who has in easy reach not only the steering wheel but also means for regulating the steam to engine, the forward or reversing gears, and the brakes. These are very powerful, and can also be operated from the rear of engine.

The pumps have a capacity of 300 gallons per minute, and will force a jet to a height of 150 feet. The total weight of engine supplied with fuel, water, etc., is a trifle less than three tons. The boiler is a quick firer and starting with a boiler of cold water steam is up within six minutes.

### Thousand Mile Run of A. C. of G. B.

On the 23d of this month there will start from London at 7 A. M. the automobilists who participate in the thousand mile run of the Automobile Club of Great Britain. For this tour there have been entered fifty automobiles by manufacturers and agents, and twenty-five by private owners. These automobiles vary from a motor tandem to a sixteen passenger char-a-banc.

The run is to be interspersed by exhibitions at the various towns through which the procession will pass, hill climbing contests, etc. The run has been well advertised, hotel keepers and local authorities have been notified to prepare for the contemplated invasion, supplies of petrol, etc.,

have been despatched to points on the route, so that it seems every precaution has been taken to provide for the success of the undertaking.

A prize fund of about \$1,500 has been subscribed, and in addition there are three medals offered by the Automobile Club of France, a silver cup and ten pounds to every automobile that completes the thousand miles satisfactorily. The time extends over twelve running days, the time table calling for about 100 miles a day. It is not a race or speed contest, as the speed is to be kept within the legal limit, which in some districts is as low as eight miles an hour.

### A Pocket Volt-Ammeter.

An electric instrument that will be found very useful to the owner or user of an electric vehicle is shown herewith. It can also be used for testing primary or storage batteries for electric ignition. This instrument is especially valuable in locating weak or dead cells in a battery. It has three scales reading from 0 to 4 volts in tenths, 0 to 40 volts in units, and 0 to 10 amperes in fourths. Other styles reading in volts alone or in amperes are being made by the maker, Louis M. Pignolet, 78 Cortlandt St., New York.



### Perfection Spring Cushion.

A cushion which will be found especially well fitted for automobiles is illustrated in the accompanying cut, which shows the completed cushion and also the spring foundation. The spring is called the "perfection" In its design, as will be noticed, the ends of the spiral spring are woven into the wire cloth, so that upon compression the action is not entirely on any one spring,



PERFECTION SPRING CUSHION.

but the elasticity of all is called into play. It furnishes therefore an excellent foundation for a carriage cushion.

Upon being covered and upholstered it makes an elegant seat. These perfection cushion springs are made by F. H. Thompson, 36 and 38 Elm St., Portland, Me.

The James H. Lancaster Company, of 95 Liberty St., New York, has just brought out the first of its line of gasoline automobiles. The new vehicles embody a number of novel features in construction and design. The name adopted for the new vehicle is Lancamobile.

**Bogart's Automobile Igniter.**

For convenience in starting the burner under the boiler of steam automobiles, the device illustrated herewith has recently been placed on the market by A. L. Bogart & Co., of 123 Liberty St., New York. It consists of a spark-producing device contained in a cylindrical metal case, five inches long and three inches in diameter. Projecting from the upper side of this case is a stem

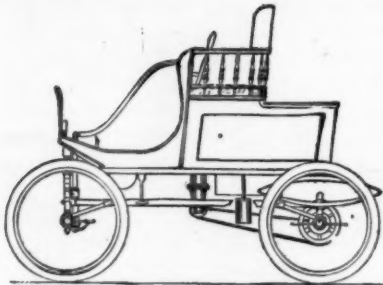


FIG. 1—BOGART'S IGNITER.

surmounted by platinum sparking points, one of which is automatically movable. This instrument, known as the igniter, is suspended by means of an iron brace screwed fast to the bottom of the vehicle in such manner that the sparking points pass up through one of the air tubes in the bottom of the burner and project within the same just above its upper surface. Fig. 1 represents the igniter as attached to the steam vehicle, known as the locomobile.

Fig. 2 is a diagram of the igniter and electrical connections on a larger scale, the dotted lines be-

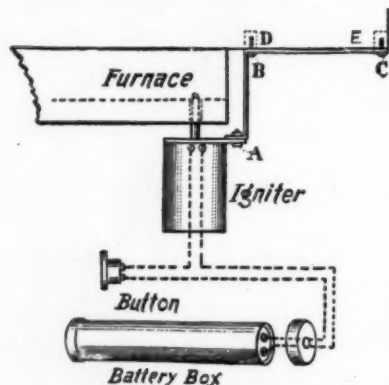


FIG. 2—BOGART'S IGNITER.

tween igniter, button and battery box indicate the wires connecting the same. The push button is usually placed at the right hand side of the driver, preferably near the starting lever. In operating this arrangement, the fuel having been turned on, it is only necessary to push the button when a lighting spark will be produced inside of the fire box.

**Trade Notes.**

The Oceanic Automobile Co. has been formed to operate automobiles in Atlantic City. It is capitalized at \$400,000.

The Oyler Mfg. Co. was recently incorporated at Minneapolis, Minn., to build bicycles and automobiles. Capital stock, \$50,000.

In the current catalogue of the Elastic Tip Co., of 370 Atlantic Ave., Boston, are listed a number of automobile parts, such as drop forgings, frame parts, hubs, axles, tubing, tires, etc.

The Consolidated Motor-Vehicle Co. was recently incorporated at Newark, N. J., with a capital of \$100,000. The incorporators are John W. Moakler, Jas. S. Garvin and Frederick Smith.

The Shaw Motor Vehicle Co., Boston, Mass., expects to have its new motor for automobiles ready this month. Mr. Henry F. Shaw, of West Roxbury, Mass., is the mechanical expert of the company.

The Marlboro Automobile & Carriage Co., of Marlboro, Mass., has completed its first automobile, and others on the way. It is two-seated, steam-driven vehicle, mounted on 30-inch steel wheels with ball bearings.

# Wagon Bodies

J. P. Sjoberg &amp; Co.

145-147 Eleventh Ave.

New York City

Telephone

3109 18th St.

Made to Order for

# Automobiles

## THE LIFE OF AN AUTOMOBILE.

The easy working of the parts and the comfort of the driver

**Largely Depends Upon Perfect Lubrication.**

## Dixon's Pure Flake Graphite

Is the only lubricant that can withstand the heat in a gas-engine cylinder. Pure flake graphite perfectly lubricates motor cylinders and all working parts. We prepare Special Lubricants for Gears of Electric Motors and Special Lubricants for Chains of Motor Vehicles. *Correspondence solicited.* Samples free to responsible parties.

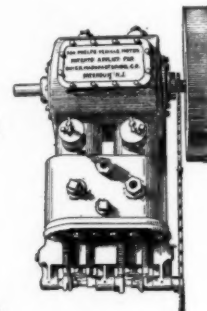
**JOSEPH DIXON CRUCIBLE CO., JERSEY CITY, N. J.**

## The Quick Manufacturing Co.

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## Our Motors are Guaranteed to be Reliable

Under the Most Adverse Circumstances.

Manufacturers of **GASOLINE VEHICLE MOTORS.**Long Distance Telephone,  
505 b Paterson.**PATERSON, N. J.**

The Baker Motor Vehicle Co., of Cleveland, O., expects shortly to have their first vehicle out. The work of equipping the new factory requires time and the demand for raw material often delays the production of the finished product.

The circular of the Bay State Automobile & Engine Co., 7 Exchange Place, Boston, shows several designs the company contemplate building. A hydrocarbon motor said to be the invention of Mr. Lucian M. Foster, is to be used.

The Grant Ball Co., of Cleveland, O., carries in stock steel balls up to 2 1/4 inches in diameter. A million balls of 1-16 and 3-32-inch can always be found in the stock room, or on the way to or from it. It is the tendency of these balls to keep moving.

The Oakman Motor Vehicle Co.'s new design of automobile has a number of new features. The gage of both front and rear wheels will be the same, and the wheelbase will be longer. This will give more room to the occupants and add to the comfortableness of the vehicle.

The new catalogue of the Equitable Autotruck & Power Co., of Boston, Mass., shows a large number of automobile designs. The illustrations do not show, however, anything of the motive power or transmitting devices. Electricity is mentioned as the power employed.

New incorporations: Foster Automobile Mfg. Co., of Rochester, N. Y.; capital, \$100,000. Conrad Motor Carriage Co., Buffalo; capital, \$25,000. Friedman Automobile Co., Chicago, Ill.; capital, \$100,000. Simplex Motor Vehicle Co., Kittery, Me.; capital, \$500,000.

The Automobile Forecarriage Co. has been incorporated with a capitalization of \$5,000,000. The incorporators are H. Bergholtz, of Ithaca; J. W. S. Langeman, of Paris, France; W. Hazelton and F. H. Rosse, of New York City, and E. J. Paterson, of Plainfield, N. J.

The Knox Automobile Co., recently incorporated for \$50,000, has elected officers as follows: W. E. Wright, president; H. A. Knox, vice-president; E. H. Cutler, treasurer, and Albert E. Smith, secretary. Mr. Knox and Mr. Cutler were formerly with the Elektron company of Springfield, Mass.

The Dow Portable Electric Assistant Co., of Boston, Mass., is giving special attention to spark coils and batteries for the electric ignition of gasoline engines. Users of these engines know the importance of having well constructed apparatus and these battery equipments are regulated so as to give uniform service.

The Willard storage batteries are to be used by the Indiana Bicycle Co. in the automobiles of its construction. This well-known type of storage batteries is manufactured by Sipe & Sigler,

## LANCAMOBILES.

**LANCAMOBILES—Ideal Auto-Vehicles.****LANCAMOBILES—Triumphant gasoline operated carriages par excellence.****LANCAMOBILES—Automobilism effectually realized****LANCAMOBILES—Locomotion without risk.****LANCAMOBILES—Pleasure without danger.****LANCAMOBILES—Anglo-American strength and ingenuity with Parisian daintiness.****LANCAMOBILES—Odorless noiseless, steamless.****Luxurious mobility, safety, speed, simplicity.****LANCAMOBILES—Pleasure, business, trucking.**

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Illustrations, prices and full particulars on application to the patentees and manufacturers

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of Cleveland, O. This automobile battery has been especially devised with a view to the requirements of the self propelled vehicle.

The morals and good qualities of the Solar lamp are set forth in a catalogue which bears on its cover a modern presentation of the solar system. This pamphlet has been gotten up in a very attractive manner by the Badger Brass Mfg. Co., of Milwaukee, Wis. Lamps for carriages and automobiles are illustrated and described.

The Nungesser portable air-tight rubber cell batteries are spoken of very highly for gasoline motor vehicles. The cells are liquid tight and there is no danger of breakage as they are very substantially constructed. The total capacity of cell 4 1/2 by 6 is 150 ampere hours. L. H. Allen, 2427 Michigan Ave., is looking after Chicago and Western trade.

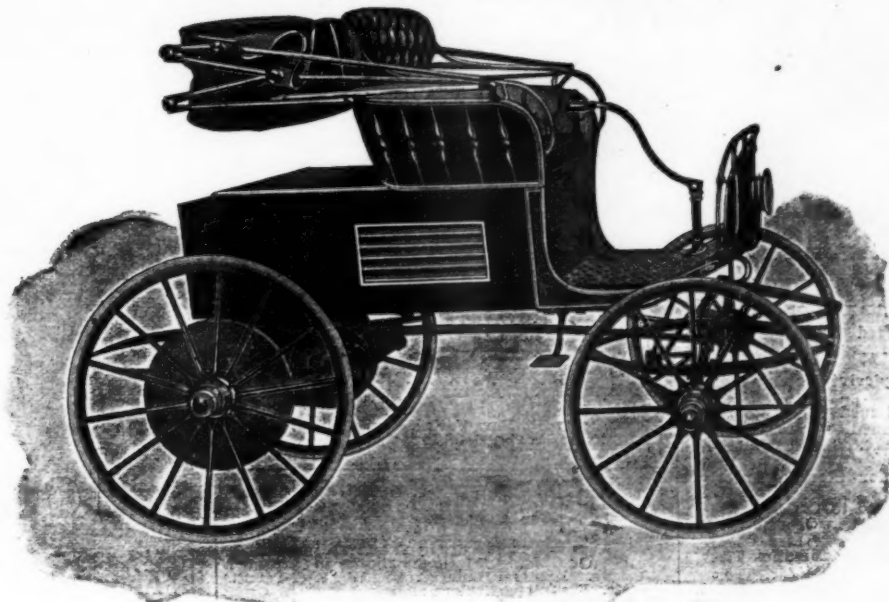
The Porter Motor Co., of 950 Tremont Bldg., Boston, Mass., is among the more recently organized companies. The automobile to be built by this company is operated by a Porter gasoline motor, the invention of Maj. M. D. Porter, the president of the company. The motor and all working parts are enclosed in dust-proof cases. Ball-bearings are used and friction is reduced to a minimum. The capitalization of the company is \$1,000,000, with stock at \$10 a share.



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**American Electric Vehicle Co.,**

Office and Repository: 134 W. 38th Street  
New York City, U. S. A.

## Trade Notes—Continued.

The Holzer-Cabot Electric Co., of Boston, has recently gotten out an electric sparking dynamo that weighs but 10 pounds. Its size is but  $7\frac{1}{2} \times 4 \times 4$ . It is intended only for the smaller sizes of gas engines. This small size has been gotten out to meet the demand for an automobile sparking dynamo smaller than the standard sizes.

Something very handsome in the lithographic line is the new catalogue of the Woods Motor Vehicle Co., of Chicago. The colors bring out and make more realistic the automobiles represented. A very complete line of self-propelled vehicles are shown, and on the opposite page the specifications of the carriage is given. It is by far the most elaborate catalogue of the kind that has so far been issued. On more closely studying the catalogue a few lines at the top of the page reveal a connected story which tells of the automobile in general.

The American Motor Co., of New York, has absorbed the Monitor Vapor Engine & Power Co., of Grand Rapids, Mich., and will erect a new factory on the Hackensack River about a quarter mile from the factory of the Automobile Co., of America. The new company will build boats from the smallest size to 73 feet in length. The two former companies are both well known manufacturers and have patterns for all sizes of engines and boats. The motors will be of the same design and system as those used in the automobiles made by the Automobile Co. of America. It is expected that the new factory will be in operation in about 90 days. The affairs of the company will be in the hands of Messrs. John H. Flagler, Wm. S. McCay and Albert T. Otto.

The Riker Electric Vehicle Co., of Elizabethport, N. J., is at present especially busy in turning out automobiles for nearly every service. A representative of THE AUTOMOBILE was recently shown through the extensive works and given an opportunity to inspect the many vehicles in the process of construction. The company is known as one of the pioneers in automobile building, Mr. A. L. Riker having constructed one of the first vehicles ever made in this country. The plant is one of the largest devoted to the building of automobiles. It covers two and one-half acres and is complete in its equipment throughout. Practically every part of an automobile is here built, including the wood-work, and the construction of the batteries will soon be done in the factory. Mr. F. C. Stevens, the president of the company, states that the outlook for the automobile industry is very promising.



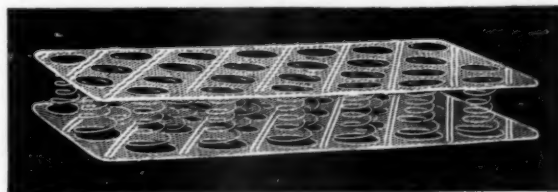
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Write for prices and catalogue.



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We Make, Rent, Recharge and Repair Storage Batteries.

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## Automatic Locomobile Furnace Igniter

Illustrated in Reading Columns of this Issue

NEW and simple ELECTRIC DEVICE by which FIRE IN FURNACE may be IGNITED or RELIGHTED at any time, by SIMPLY PRESSING A BUTTON at the seat. PERMITS OF EXTINGUISHING FIRE and thus SAVING FUEL during

stops, or RELIGHTING while under way SHOULD FIRE BE BLOWN OUT by wind.

**A. L. BOGART CO.,** Sole Manufacturers, 123 Liberty Street, New York City

### Patents.

Lists of Automobile patents granted during month of March.

- 645,478—Electric Accumulator. Issued to H. Leitner.
- 645,485—Carburettor. Issued to E. A. McAllister.
- 645,398—Igniter for Explosive Engine. Issued to L. Jones, Jr.
- 645,481—Cushion Tire. Issued to S. S. Miller.
- 645,347—Pneumatic Tire. Issued to H. Buchig-nani.
- 645,177—Valve Gear for Explosive Motors. Issued to H. P. Maxim et al.
- 645,497—Motor Vehicle. Issued to H. Stommel.
- 645,378—Motor Vehicle. Issued to W. O. Worth.
- 645,158—Vehicle Wheel Brake. Issued to G. N. Windle.
- 644,144—Connecting Plate for Storage Battery. Issued to H. G. Osborn.
- 644,245—Ball Bearing. Issued to C. E. Gates.
- 644,433—Boiler Signal Apparatus. Issued to W. B. Lowe, Jr.
- 644,476—Inflation Valve for Pneumatic Tires. Issued to R. L. Smith.
- 644,288—Tire for Wheel. Issued to H. C. Frost.
- 644,126—Non-Puncturable Speeding Attachment for Pneumatic Tires. Issued to B. Charles.
- 644,295—Vapor or Gas Engine. Issued to Lepper & Dial.
- 644,163—Brake for Vehicle. Issued to J. Faust.
- 643,865—Electric Controller for Automobiles. Issued to C. G. Burrows.
- 643,890—Roller Bearing. Issued to A. E. Burnouf.
- 643,627—Transmitting Device for Automobiles. Issued to J. C. Blevney.
- 644,027—Hydrocarbon Vaporizer for Explosive Engines. Issued to W. Balnes.
- 643,625—Running Gear for Vehicles. Issued to R. S. Birch.
- 643,705—Running Gear for Vehicles. Issued to F. D. Williams.
- 643,630—Traction Wheel for Vehicles. Issued to J. V. Bush.
- 644,608—Ball Bearing. Issued to J. Keller.
- 644,771—Ball Bearing. Issued to R. E. Kimball.
- 644,605—Waterproof Protection for Vehicles. Issued to H. A. Jacobs.
- 645,044—Gas Engines. Issued to A. T. Otto.
- 644,702—Variable Speed Gearing. Issued to C. E. Brooks.
- 644,566—Gas Engines. Issued to R. M. Aslakson.
- 644,798—Gas Engine. Issued to A. J. Frith.
- 644,951—Gas Engine. Issued to Thornton & Lea.

### New Books.

**NATIONAL BICYCLE AND AUTOMOBILE DIRECTORY FOR 1900.** Chicago: Paul Mensch & Co. Cloth; 260 pages; \$3.00.

This directory for the present year, in addition to the lists of bicycle dealers, builders, repairers, etc., contains several hundred names of automobile part makers, and dealers in such supplies. It is, of course, impossible to prepare a directory of a new industry such as this that will be complete and correct for any length of time. This list here given will prove very beneficial to those who have occasion to address automobile companies or makers of parts.

**THE AUTOMOTOR AND HORSELESS CARRIAGE POCKET-BOOK FOR 1900.**—Flexible leather; size, 4½ by 6½; 330 pages.

This is a handy pocket-book for the automobilist, containing a mass of information such as is constantly required by owners, users and builders of self-propelled vehicles. The contents include meteorological data, calendars, tables of moonlight nights, the important acts and regulations governing the use of automobiles in Great Britain, tables of weights and measures, constants for engineers' use, resistance of roads, gradients, tables and data of metals, wires, pipes, etc., designs for the construction of steam boilers, engines motors, gas motors, carburettors, trials of same, etc., rules for the care and operation of automobiles. There is also a list of manufacturers of automobiles and parts in the United Kingdom, France, Germany and the United States, and a glossary of automobile engineering terms in French, German and English.

Copies of the above will be sent postpaid for one dollar by The Automobile, 150 Nassau St., New York.

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Pop Safety Valves, Cylinder Relief Valves, Steam Gauges, Automatic Water Gauges and Gauge Cocks for



**Steam Vehicles**

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N.B.—Expert testimony given in damage suits.

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**REPORTER PUBLISHING CO.,**  
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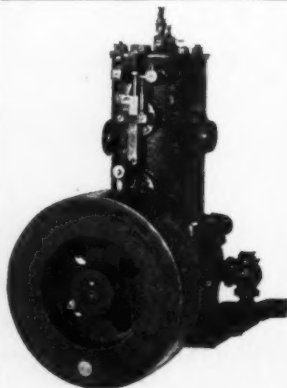
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## Gasolene Motors

1-2 to 2 Horse Power

With or without Water Jacket for

**AUTOMOBILES AND LAUNCHES.**

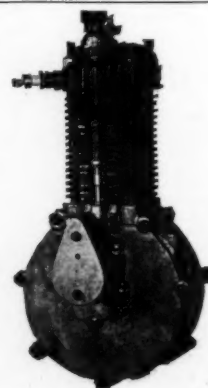
Vertical or Horizontal;  
Electric Ignition.

Large factory suitable for experimental work. Any style of carriage built to order from owner's drawings. Larger sizes for heavy vehicles in course of construction.

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**THE GAS AND OIL ENGINES.** By Clerk. 558 pages, 228 illustrations. Sixth edition. Price, postpaid, \$4.00.

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"Horseless Vehicles, Automobiles and Motor-Cycles, Operated by Steam, Hydro-Carbon, Electric and Pneumatic Motors," by Mr. Gardner D. Hiscox, is the title of a new book now on the press. Will prove of great value to all interested in the construction or use of the self-propelled vehicle. 365 pages, 270 illustrations, large octavo. Price, postpaid, \$3.00.

"Gas Engine Construction," by Henry V. A. Parsell and Arthur J. Weed, is another new book soon to be out. It will be a practical book, giving working drawings and various details of these engines. Price, postpaid, \$2.50.

The United States patents relating to automobiles from the year 1780 to July 1, 1899, are being compiled by Mr. James T. Allen, examiner of the United States Patent Office. These patents number about one thousand. The reproduction of the drawings of these patents is a mammoth undertaking, which is nearly completed, and the work will be out and ready for delivery in a few weeks. The price of this work will be \$25.00. The publishers of THE AUTOMOBILE will receive subscriptions to this work, and it will be sent postpaid at the above price as soon as issued.

Catalogue of electrical books for the asking. Books sent postpaid on receipt of price by THE AUTOMOBILE, 150 Nassau St., New York.

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IN GAS, GASOLINE and OIL ENGINES

We make special Sparking Points for this service possessing extreme hardness and greater durability than platinum.

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State of Illinois: Illinois Electric Vehicle Transportation Co., 173 Michigan Avenue, Chicago, Ill.	State of California: A. E. Brooker Ridley, Agent, Parrott Bldg., Market Street San Francisco, Cal.
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